17 February 2011

To: Ken Jong, CHSTP Engineering Manager

Fr: Bruce Hilton, John Chirco, Infrastructure

Re: Notice to Designer (NTD) No. 1 – Geotechnical Investigations for Preliminary Design, R1

Purpose

This memorandum augments guidelines presented in geotechnical technical memos:

- TM 2.9.1 Geotechnical Investigations
- TM 2.9.2 Geotechnical Report Preparation
- TM 2.9.3 Geologic and Seismic Hazard Analyses

These TMs provide guidelines for investigations, laboratory testing, data analyses, and report preparation when subsurface explorations are required. Although these protocols are applicable for the 30% subsurface investigations, much of the information in these TMs is more appropriate for the scope of subsurface investigations required to support final design. Therefore, this memorandum presents guidance to Regional Consultants in developing the scope of the geotechnical investigations required to support the preliminary (30%) design level defined in TM 0.1.1 – Preliminary (30%) Design Scope Guidelines.

Implementation Guidelines

The principal objectives of the preliminary engineering is to confirm feasibility of the design and construction of the high-speed train system, develop capital cost estimates, and produce technical work products that will be the basis of documents used for procurement of final designers under a design/build procurement. The geotechnical and fault analysis data shall be focused on fulfillment of the CHSTP performance criteria. Allowable deformations consistent with these design criteria are under development and will be provided when available. The basic approach for establishing the scope of work for subsurface investigations follows:

1. Regional Consultants review the TM 0.1.1 – Preliminary (30%) Design Scope Guidelines
2. Regional Consultants review geotechnical technical memoranda
3. Regional Consultants review the Geologic and Seismic Hazards Report prepared at 15% Design level
4. Regional Consultants review the Geotechnical Data Report prepared at 15% Design level
5. Regional Consultants develop draft subsurface investigation plan
6. Regional Consultants and Program Management Team convene workshop to review and discuss scope and rationale for the proposed plan for each geographic segment

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7. Regional Consultant revises plan and transmit for PMT (Environmental and Engineering) review, including:
    - Map identifying boring locations and unique identifier
    - Table listing the type, depth, and approximate duration of field work for each boring
    - For each boring location, a brief, written assessment of whether the action qualifies as categorically exempt under the California Environmental Quality Act (CEQA) and categorically excluded under the National Environmental Policy Act (NEPA), with supporting documentation. See CEQA Guidelines §§15300, 15300.2, and 15306; NEPA Guidelines 40 CFR 1508.4 and 1508.27 and Federal Railroad Administration Procedures for Considering Environmental Impacts, Section 4 (e).
    - Photographs of the areas where the borings are proposed, showing local context.
    - Photograph(s) of typical equipment to be used that covers the proposed locations, identifies where the equipment may be used, and describes the extent of any clearing that would take place to accommodate the equipment.
    - Listing of permits and permit requirements and regional consultant team member responsible for obtaining the permits.
    - Identification of sites on private parcels requiring Authority assistance to obtain entry rights.
8. PMT (Environmental and Engineering) performs review and provides concurrence that plan is appropriate for 30% Design.

The implementation of these guidelines should focus primarily on the following:

- Obtaining site data and design input in support of the 30% engineering
- Identify geotechnical conditions unique to the HST system and/or CA conditions and methods
- Preparing required deliverables for the 30% design phase.

Geotechnical investigations and analyses may be advanced in phases. Initial explorations and data acquisition will identify and quantify geotechnical conditions and requirements for potential mitigation(s) along the HST alignment. Secondary geotechnical explorations and analysis will be performed to support the design of infrastructure features and mitigations to prepare a 30% level design and cost estimate. The geotechnical recommendations for design

and/or mitigation(s) to a 30% design level shall focused on meeting or exceeding the CHSTP performance criteria and shall be included in the draft Geotechnical Baseline Report, as appropriate.

Geotechnical studies and design recommendations should focus on:

- Areas where the least amount of information is available in segments where lateral uniformity of subsurface conditions is expected to vary/change significantly
- Areas of complex topography and/or subsurface conditions
- Complexity and importance of the infrastructure features (e.g., at-grade versus viaduct versus tunnels) being designed
- Areas where geotechnical design recommendations are likely to have the greatest impact on the 30% design level cost estimates and feasibility assessments
- Areas of instability
- Extent of soft ground, and/or ground conditions susceptible to strength loss or settlement/deformation due to seismic ground shaking.

Geotechnical Deliverables for 30% Design

In addition to supporting the 30% Design effort, the following geotechnical work products will be prepared by the Regional Consultants:

- Final Geotechnical Data Report (GDR)
- Draft Geotechnical Baseline Report (GBR-B)

Support of Design Build Procurement

The Subsurface Investigation Plan is to include only the investigations needed to support 30% Design. Recommendations for subsurface investigation to mitigate owner risk should be made in a separate document. The intent is for teams to put forward their ideas to mitigate risk (as opposed to investigations required to confirm feasibility of 30% Design) that can be used to identify specific ways to address the geotechnical risks during procurement.